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Joint Suppression of Enemy Air Defenses: Sowing the SEADs of Change

By

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Departments of the Navy or Air Force

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## **ABSTRACT**

### **JOINT SUPPRESSION OF ENEMY AIR DEFENSES: SOWING THE SEADS OF CHANGE**

Air power has become increasingly important to America's defense and force application capability. Protection of our airborne platforms should therefore be one of the most important considerations when planning and conducting military operations. For this reason, military and civilian leaders must focus on improving our joint suppression of enemy air defenses (J-SEAD) capabilities. Yet over the past decade SEAD has been somewhat taken for granted and under emphasized. This paper will examine several factors that affected SEAD application during the 1990s and will focus on the importance of in-depth studies, true joint interoperability, and ensuring Commanders-in-Chief and Joint Task Force Commanders realize the importance of J-SEAD to our nation's warfighting capability.

With the rising cost of technology, the Department of Defense will be challenged in the coming years to maintain America's place of military primacy. Instead of simply buying the latest equipment to stay one jump ahead of the adversary, the military services will most likely have to find innovative and inexpensive ways to increase their capabilities. By scrutinizing all aspects of J-SEAD with an eye for improvement, by emphasizing joint operations in every aspect of peacetime and war, and by properly employing our complement of J-SEAD capabilities, America will continue to set the world standard for air power supremacy.

## **JOINT SUPPRESSION OF ENEMY AIR DEFENSES:**

### **SOWING THE SEADS OF CHANGE**

#### **INTRODUCTION**

Several potholes mar the highway ahead for joint suppression of enemy air defenses (J-SEAD). For instance, potential US adversaries are obtaining highly advanced and sophisticated integrated air defense systems (IADS) using top-of-the-line components and missile systems from around the world. Unfortunately, the cost of technology that allows friendly air assets to penetrate these IADS and operate with some measure of freedom is skyrocketing. Additionally, over the years, American military services have developed “styles” of SEAD based on their own particular needs, and not necessarily in ways that would complement each other in a cooperative manner. This “county option” approach has affected JSEAD doctrine, which has been extremely slow to develop, largely because of these service differences. And finally, for various reasons, some of our Joint Force Commanders (JFC) may not have placed enough emphasis on J-SEAD in the recent conduct of major campaigns or operations. Consequently, with the notable exception of Operation Desert Storm, J-SEAD has been less effective than it might have been over the years.

If the United States and its allies are going to remain dominant in future conflicts, some of these potholes will have to be eliminated. Where possible, the individual services must address these issues without incurring significant expenditure. Where this is impossible, the Department of Defense and Congress must make room in the budget for critical improvements. However, one thing is certain: those capabilities that the services possess or are allowed to procure in the future must be utilized in the most effective and

efficient manner possible. America's armed forces must operate jointly in virtually every situation, for only then will they remain fully capable of emerging victorious in any future military conflict.

This paper will address some of the issues raised above, in an attempt to focus attention on J-SEAD, its potential to enable decisive operations, and its vulnerability to neglect by America's civilian and military leaders.

### **THE MODERN DILEMMA**

It is no secret that in terms of defense spending, and more specifically priorities for defense spending, America has found herself in a real dilemma since the end of the Cold War. Weapon systems and their support assets are becoming prohibitively expensive, while the worldwide threat demanding their procurement is becoming more and more indistinct. Of course, the fact that a threat is difficult to define or label makes it no less deadly in a combat situation or less of a problem for pursuing and protecting America's national interests. However, to the American public and its elected representatives, the timeless question still remains: should we spend our money for "guns or butter?"

In analyzing the requirement for SEAD, the modern cost/risk dilemma is especially evident. In Iraq in 1990, America was faced with an IADS that was considered to be one of the best in the world at that time. Appropriately for a threat of that nature, American and Allied operational planners mounted a significant effort to gather intelligence, the better to completely understand the intricacies, strengths, and weaknesses of that IADS. Also appropriate was the emphasis by operational planners on the early destruction of Iraq's IADS in a systematic effort that included assets from every branch of the US military and its allied partners. Lt Col James Brungess, a noted US Air Force strategic analyst and electronic

warfare expert, asserted in 1994 that “it was the integrated, total force application of SEAD in Desert Storm that will serve as the basis for ‘true’ joint SEAD operations of the future.”<sup>1</sup> But if Desert Storm *was* such a model, why was J-SEAD allowed to languish, largely ignored from both procurement and planning/application perspectives for nearly a decade? Why are the services forced to rely on an insufficient number of aging EA-6B aircraft for their sole standoff and escort jamming capability? Why do the Army, Air Force, Navy, and Marine Corps have such disparate philosophies for conducting SEAD? Why was there no Desert Storm-style J-SEAD “campaign” in 1999 during Operation Allied Force?

The answers to these questions, some of which are addressed below, tend to share one central premise: America’s congressional and military leaders, to include geographic Commanders-in-Chief (CINCs) and joint task force (JTF) commanders, have not placed enough priority on the importance of J-SEAD to the success of our military operations. If they had, J-SEAD would be integrated more fully into our procurement, combat exercises, and force application operations around the world.

### **A BRIEF DISCUSSION OF SEAD**

SEAD has come a long way from the early days in World War II when B-25s would fly directly down a radar beam to its source and visually strafe the site with its nose cannons. Today, the US employs myriad complementary systems designed to detect, pinpoint, and destroy air defense systems from long range. These various systems, owned by each of the military services, are most effective when combined in a concerted, multi-dimensional attack on an enemy IADS.

Early SEAD efforts in Vietnam focused on protecting strike aircraft from surface-to-air missiles (SAM) and radar-guided anti-aircraft artillery (AAA) along a specific corridor or

around a certain target area. This was a result of the US perception of air defenses as individual elements or as point-defense assets used to protect high-value targets, and not as an integrated, layered system. This type of suppression is known as Localized SEAD and is best suited for situations where the objective is to disrupt or deny enemy air defenses for a short duration to allow strikes or operations. A more current example of localized SEAD is the 1986 Operation Eldorado Canyon air strike against Libya.

Localized SEAD is doctrinally defined today as one of three broad categories of SEAD. Although Libya possessed a fairly sophisticated Soviet-style IADS, US planners correctly calculated that electronic jamming would force the SAM operators to act autonomously, without early warning (EW) and critical command and control (C2) communication links. Forced to search continually with their acquisition and tracking radars, individual SAM sites became vulnerable to pre-planned attacks with anti-radiation missiles (ARM). The localized SEAD effort incorporating jamming and ARMs rendered the Libyan IADS largely ineffective.

A second category of SEAD is Opportune SEAD, which includes aircraft self-defense and offensive attacks against enemy air defense targets of opportunity. Operations in both Desert Storm and Allied Force demonstrated the continued relevance of aircraft self-protection systems and opportune reactions to pop-up air defenses. These operations also argue for having reactive J-SEAD assets and hard-kill weapons readily available to protect strike packages, pinpoint pop-up threat sites, and potentially destroy them.

However, the category of SEAD that demands the most scrutiny is Area of Responsibility (AOR)/Joint Operations Area (JOA) air defense system suppression. "AOR/JOA air defense system suppression creates increasingly favorable conditions for

friendly operations by disabling enemy air defense systems (or major capabilities of those systems).”<sup>2</sup> This is the category of SEAD that will provide the best protection for friendly forces during a long-term operation or major theater war. AOR/JOA air defense suppression is the category of SEAD that was so effective in Desert Storm as part of the “air campaign” and was so conspicuously absent during Allied Force. “The Desert Storm SEAD campaign was not restricted to traditional electronic combat assets only, but used the entire available array of aircraft and weapons to suppress the totality of the Iraqi IADS, not just bits and pieces of it.”<sup>3</sup> There was also a determined effort to go beyond merely suppressing the Iraqi threat; the Allies sought to destroy as many of the lethal air defenses (SAMs and radar-guided, large caliber AAA) as possible. Actually destroying the SAM sites removed them from the enemy order of battle, preventing them from threatening allied strike packages in the future. “The prosecution of the SEAD campaign against Iraq was continuous and unrelenting; it destabilized the IADS and never allowed it to recover.”<sup>4</sup>

Yet in Yugoslavia less than a decade later, the NATO allies faced a similarly integrated and somewhat more complicated IADS than that of Iraq, without conducting a similar campaign to crush those defenses. According to the official Kosovo Report to Congress, “Phase 1 of the military operation would establish air superiority over Kosovo (creating a no-fly zone south of 44 degrees north latitude) and degrade command and control and the integrated air defense system over the whole of the Federal Republic of Yugoslavia. Phase 2 would attack military targets in Kosovo and those Yugoslav forces south of 44 degrees, which were providing reinforcement to Serbian forces in Kosovo.”<sup>5</sup> However, beginning March 24, 1999, phases 1 and 2 were executed simultaneously, which diverted lethal assets from the destruction and degradation of the IADS to other military targets.

The preponderance of post-conflict analyses of Operation Allied Force reflect on the shortsightedness of NATO (especially American) leaders both within and outside the military. A significant number of key national leaders hoped this “war” would be a short demonstration of NATO air power, show unity and resolve, and compel Slobodan Milosevic to submit to UN and NATO demands. If that hope came to fruition, there would be no need for a SEAD campaign of the AOR/JOA order of magnitude. To be sure, the localized SEAD plan that was executed for the first few days of Allied Force was effective. The allies lost only one aircraft in the first four days of the air war over Serbia. But one may wonder if that loss could have been prevented with a concerted, cumulative AOR/JOA SEAD effort. Certainly by the sixth week of the war the Yugoslav IADS would have been battered enough to prevent the loss of a second aircraft. More significantly, allied aircraft would have been operating in a steadily diminishing threat environment instead of wondering where the same mobile SAMs might pop-up each day. Desert Storm proved that a dedicated J-SEAD campaign could produce a diminishing threat environment, which is much preferred for friendly operations. In contrast, the charts at Annex 1 illustrate the alarmingly high level of SEAD effort that had to be maintained throughout Allied Force.<sup>6</sup> These charts indicate that NATO forces were fighting the same threats day after day, instead of gradually attriting them through destructive J-SEAD, and thereby achieving increased freedom of maneuver.

#### **DESERT STORM AND ALLIED FORCE: A COMPARISON**

What *were* the differences between Desert Storm and Allied Force, and what happened in the “interwar years” to make our SEAD results so markedly different in the latter conflict? Thoughtful analysis might reveal several factors which had an impact on Allied Force, both in the conduct of the war itself and in the years leading up to it. First of

all, the Air Force made a conscious decision in the mid-1990s to retire two stalwart SEAD platforms, the F-4G and the EF-111. These airframes were expensive to maintain, and with low observable (LO) aircraft hitting the streets the Air Force felt the requirement for SEAD would be reduced. This did not prove to be the case, as LO aircraft continued to require SEAD support. The Department of Defense supported this decision and shifted money from the Air Force to the Navy to beef up the EA-6B fleet, both in number of squadrons and aircraft improvements. Not all of these changes have been acted upon; the money did not stretch as far as was hoped. The Air Force also agreed to supply aircrews to help the EA-6B community with squadron manning and operations tempo. The result of these moves was the creation of a low-density/high-demand capability, which affected peacetime training, aircrew retention, corporate SEAD knowledge, and availability of SEAD assets.

Second, Desert Storm had the luxury of a six-month buildup with tremendous interest and support from the entire National Security arena. From the President down through the CINCs and component commanders, there was a focused approach to prepare for war. This was not the case for Allied Force. The on-again/off-again nature of the Balkan conflict became an irritant to some and a secondary issue to others. Even when tensions reached their climax during the Rambouillet Summit, the general feeling was that NATO was not going to war with Serbia. At most it would be a 3-day air power demonstration to force Milosevic to back down. Therefore, the planning emphasis was on a short campaign with surgical precision on high-payoff targets, which eliminated the destruction of the Serbian IADS as a primary objective.

Third, The Iraqi C2 structure was well known during Desert Storm. It was approved for targeting, and mainly consisted of known, fixed sites. Some of the sites were hardened,

which created weaponeering challenges, but at least they were located and targetable. This was not the case for Allied Force, as Serbia operated a C2 net that was much more difficult to identify. Some major operations centers were never located, other critical C2 nodes were “off limits” due to their locations, and the threat systems had become more mobile since Desert Storm.

Fourth, Allied Force planners and leaders missed their opportunity to cripple the Serbian IADS at the early stages of the conflict. The Joint Force Air Component Commander (JFACC) Staff was too intent on getting approval for high-priority (but off-limits) C2 nodes for too long. Therefore, they missed the chance to target lesser priority nodes and threat sites that *were* approved, and were vulnerable early on. By the second month of the conflict, the JFACC complained that he had more SEAD forces than he could use because the targeting list was so small. But by then, the enemy had developed tactics that kept their movements hidden, nearly paralyzing allied destructive SEAD efforts. When the “over-abundant SEAD forces” proposed new tactics to locate and destroy mobile SAMs, there were conservative, risk-averse leaders in the Combined Air Operations Center who did not support the plan.<sup>7</sup>

Fifth, Allied Force SEAD suffered from a lack of priority in Intelligence, Surveillance, and Reconnaissance (ISR). The preponderance of national assets was focused on locating Serbian fielded forces in Kosovo and internally displaced personnel. The Serbian IADS was so low on the ISR priority that theater analysts had a difficult time getting to them in a timely manner on a recurring basis.<sup>8</sup>

Serbian air defense forces learned plenty from studying Desert Storm. Not only did they observe US tactics, they also spotted potential weaknesses in US systems. They learned

even more in the first few days of Allied Force, for instance, that turning on their radar meant certain detection and probable destruction. And hopefully from Allied Force, the US learned that we must judiciously spend money to acquire mission-critical technologies and find new and better ways to employ our current systems to thwart the enemy.

### **J-SEAD: ENABLER OF POWER PROJECTION**

When faced with crises or other situations in the world, America's leadership is turning increasingly to air power as the preferred military instrument of political persuasion. J-SEAD is an air power enabler and, by extension, an enabler of friendly maneuver. Whether the method is a precision weapon strike by manned airplanes or a Special Forces helicopter insertion, protection from air defenses is required to enhance the probability of mission success and reduce the potential for friendly casualties. To neglect or misuse J-SEAD potentially cripples our current and future power projection capabilities. Now that all the services possess significant air power weapons systems, the protection of those platforms must become a primary concern for joint operational planners. With the advent of air assault units, US Army ground offensives or special operations almost always include air power and depend on local air superiority for their freedom of maneuver. Vertical maneuver necessitates some form of air defense suppression, which often crosses formal service lines and becomes a joint effort. "The key feature to the growth of the SEAD concept is to incorporate all air power SEAD assets in a combined effort to achieve the theater CINCs objectives."<sup>9</sup> This is Joint SEAD in a nutshell, and the US military must eliminate any barrier to the effective joint employment of SEAD.

Given the almost certain fiscal restraint being placed on defense procurement and the number of legitimate, competing demands for those monies within the defense department,

the prudent joint war fighter and staff must leave no stone unturned in an effort to perfect military doctrine, efficiency, and the execution of future operations. This is particularly important because service differences still produce varying degrees of friction in joint operations. However, if in-depth studies (or CINCs in the field) determine that material deficiencies preclude mission accomplishment, the Joint Requirements Oversight Council (JROC) must act decisively to pave the way for swift acquisition of effective systems. For America's continued security and to protect her national interests, money must flow to address critical shortfalls in combat capability.

The Joint Staff/J-8 recently completed a Mission Area Analysis of US J-SEAD.<sup>10</sup> The study was recommended by the JROC in the aftermath of Operation Allied Force and addresses some of the concerns raised in this paper, along with many others. The premise question of the study is, "Does US J-SEAD capability fully support Joint Vision 2010/2020 and enable Joint Force Commanders to conduct decisive J-SEAD across the spectrum of military operations?" The study defines "decisive" as efficient, effective, and quick. Although the specific results of the J-8 study are classified, it highlights, as did Brungess in 1994, that there is significant room for improvement in the areas of J-SEAD C2, service interoperability, and mission execution.<sup>11</sup> Many of the shortfalls are hardware related, especially when projected against future threat systems, meaning Congress must be willing to spend money to enable the services to align and enhance J-SEAD efforts. Many other shortfalls are doctrinal issues that can be improved by emphasizing joint exercises and working groups. Altogether, these deficiencies should be alarming to congressional leaders and military commanders. The threat is advancing; the US military must be able to adapt.

### **WHAT HAPPENED TO THE "MODEL?"**

As mentioned above, Allied Force was a 78-day air war that began as a 3-day NATO bombing demonstration. Unlike Desert Storm, there was no long-range plan designed to isolate and target the enemy IADS, reducing it to a shell of its former self before moving on to other targets. To do so with some success would have created a near sanctuary of friendly maneuver that might have mitigated the need for unusually high "floors" for some coalition aircraft. It could conceivably have forced an earlier capitulation. And it almost certainly would have allowed the destruction of a significant number of the enemy mobile SAM systems that bedeviled allied operations for the entire conflict.

Initially, there were no US Army or Navy strike assets available to participate in Allied Force. There was no joint plan to use Special Forces to destroy critical IADS nodes or communication links, as they had in Desert Storm. At first, J-SEAD was an Air Force (US, German, and Italian) and Navy/Marine Corps EA-6B effort. Until the USS ROOSEVELT carrier battle group returned to the Adriatic Sea, there were no F/A-18s to help provide localized SEAD; after they arrived they were used primarily for interdiction, not SEAD. The bottom line is, vital pieces of the J-SEAD arsenal were either not available or not employed. This was a shortsighted error by the operational planners. The JFC should have ensured all types of J-SEAD assets were deployed to his theater of operations. At the very least, after it was apparent that Milosevic was not going to comply, the air war should have shifted to the Desert Storm formula: employ all required electronic warfare and J-SEAD assets to degrade or destroy the IADS and gain freedom of maneuver, then continue with the systematic destruction of strategic targets and fielded forces. In other words, NATO should have

conducted an AOR/JOA air defense system suppression operation as envisioned in joint doctrine and multi-service publications.

A major factor, however, weighing against a separate J-SEAD campaign in Allied Force was the need to put ordnance on the fielded Serbian forces in Kosovo. Any air operation that failed to immediately put pressure on those forces would be politically doomed, because once hostilities began, the Serbs in Kosovo were sure to redouble their efforts. But an intense J-SEAD effort alongside the Kosovo Engagement Zone operations against Serbian fielded forces might have yielded better results sooner. Of course, other factors, such as poor weather, had a negative impact on nearly all air operations and would have diminished the effectiveness of destructive J-SEAD as well.

#### **TO DESTROY OR NOT TO DESTROY? THAT IS THE QUESTION**

Operational planners at the JTF level must consider beforehand the potential risks for *not* taking a particular action. They must decide on an acceptable level of combat losses and develop a plan that compensates for less than optimum results. What if the war lasts longer than just a few days? How long should NATO stick with its localized SEAD plan if they encounter significant losses? At what point would an AOR/JOA air defense suppression effort be advisable to diminish combat risk, even if there are very few losses? How much SEAD is enough? How much SEAD is too much? These are difficult questions to answer; if a strike package comes home unscathed, how much less SEAD would still have prevented friendly losses? But a robust J-SEAD campaign that gradually but inexorably destroys a significant amount of enemy air defense systems can eventually be scaled back as that IADS is rendered less and less effective.

One thing is certain, as enemy IADS become more advanced, future air operations will become more and more hazardous. The increasing threat is demanding a more integrated approach to SEAD, along with new technologies that are becoming prohibitively expensive. Risking such assets in a truly sophisticated threat arena is not a palatable proposition, but the beauty of J-SEAD is the flexibility and variability of employment methods. All the weapons in the arsenal should be employed to create a chink in the modern enemy's armor. That break, once exposed and exploited, will allow gradual destruction of the IADS through lethal J-SEAD. JFCs need to become more offensively-minded in their approach to J-SEAD, especially in operations that are projected to be of long duration. By planning a definite AOR/JOA air defense suppression phase of operations, joint planners will pave the way for more successful air (and ground/maritime) operations.

“While NATO prevailed in delivering an overwhelming air offensive with virtually no loss to its forces, we must acknowledge some concerns for the future. Although the Yugoslav air defense systems were among the most capable that US forces have ever faced in combat, those defenses do not represent the state of the art. Much more capable air defense systems are currently available for sale in the international arms market. The Department [of Defense] needs to prepare for the possibility that, in the years ahead, the US may face an adversary armed with state of the art air defense systems. Our experiences in Operation Allied Force re-emphasized the importance of having a comprehensive air defense suppression capability.”<sup>12</sup>

### **THOUGHTS ON FUTURE J-SEAD EMPLOYMENT**

The JFC will always need to balance risks and rewards when planning and conducting a military campaign. An effective J-SEAD strategy will help eliminate unnecessary risks and minimize friendly losses.<sup>13</sup> Effective J-SEAD requires thorough knowledge of the existing joint assets, movement of those assets to the area of operations, and detailed J-SEAD planning at the operational level. It also relies on a C2 structure that

can quickly and accurately assess the battlefield situation and direct forces to targets that will cause enemy leadership to react to our initiative. Joint Publication 3-01.4 (under revision) is the authoritative reference for J-SEAD C2 relationships and is the foundation for operational J-SEAD planning. The JFC and his staff should also be familiar with the Air Sea Land Applications Center's J-SEAD publication. Although its subtitle, "Multi-Service Tactics, Techniques, and Procedures for Joint Suppression of Enemy Air Defenses," may seem tactically oriented, it is a rich resource of J-SEAD platform information, capabilities, and planning guides for use at the operational, as well as the tactical, level of war.

"Effective J-SEAD strategy begins at the JFC/JTF level, with commander's guidance. The JFC should establish operational priorities that will become the starting point for planning the entire campaign, to include J-SEAD importance."<sup>14</sup> If the JFC guidance lacks sufficient emphasis on J-SEAD, it is incumbent on the JFACC to highlight this deficiency to the J-3 (Operations Director) or the JFC early in the planning process. In this way, campaign plans can be developed with J-SEAD elements interwoven throughout.

"If the JTF is organized with service as well as functional component commanders, the J-SEAD effort can become further complicated. Typically, each service component will plan for its own SEAD requirements, calling on joint assets when required or desired for necessary effects or capabilities. When possible, SEAD requirements should be incorporated into the Air Tasking Order (ATO) to ensure airspace and target deconfliction. Targets that cannot be adequately serviced by organic SEAD assets should be submitted to the JFACC by their respective liaison officers (LNOs)."<sup>15</sup>

In an ideal campaign, the J-SEAD plan should allocate assets as required to service *all* missions, as part of an overall effort. This would allow the most efficient and effective use of our limited J-SEAD systems and would be the essence of true *Joint* SEAD.

During an initial AOR/JOA J-SEAD campaign, primary emphasis should be placed on the destruction of as much of the enemy IADS as possible, with particular attention to

mobile SAMs and EW radars. After only a few days of offensive operations in Allied Force, Serbian SAM operators adapted to US localized SEAD tactics by using on/off blinking and optical launches, often moving their mobile systems on a daily basis. While the threat of ARMs forced these types of reactions, thereby degrading Serbian air defenses, a more effective approach for long-term operations would have been a dedicated AOR/JOA destructive J-SEAD operation. The SAM site that is destroyed does not have to be suppressed the following day, saving those assets for other air defense sites. And the more frequently a mobile system plays the shell game with ingress/egress routes, the more likely it will score an opportune kill on friendly forces.

#### **CAN'T WE ALL JUST GET ALONG AND PLAY NICELY TOGETHER?**

Another key variable in the total J-SEAD equation is interoperability. While Operation Desert Storm applied each of the services' assets in a joint SEAD campaign, it really fell short of achieving true *jointness*. "Individual service paradigms of warfare and tactics were applied to achieve joint objectives. The Desert Storm SEAD campaign was a very cleverly crafted amalgamation of single-service SEAD assets and tactics to achieve overall goals."<sup>16</sup> But until the services develop, train with, and operate from a true J-SEAD joint doctrine, the tendency to revert to individual service efforts will remain. "The institution of a single information-processing network linking all the services on the battlefield in real time will also allow a more fluid use of each of the services' assets as a function of overall joint objectives rather than service objectives."<sup>17</sup>

Although ongoing operations such as Northern and Southern Watch allow many J-SEAD components to work more effectively together, often these environments don't allow for much joint experimentation in tactics or procedures. They do expose service members to

the doctrines, capabilities, and limitations of their sister services and their equipment. But the best way to ensure maximum interoperability in crisis or war is to consistently train together in peace. Full-scale joint exercises such as the Air Force's Red Flag and the Navy's JTF exercises pay huge dividends by allowing operators at the tactical level of war to perfect their science against high threat scenarios. These types of joint training situations must be expanded to include as many SEAD assets as possible, and should also involve JTF-level commanders and their planning staffs. It is especially important that they receive enough emphasis from senior leaders to become viewed as *truly joint*, not just as Air Force exercises with Navy and Army participants, or vice versa. By exposing budding JFACCs and JFCs to the full spectrum of J-SEAD capabilities in joint training environments, they will be more likely to emphasize effective employment of those capabilities in future conflicts.

Effective J-SEAD training also requires sophisticated, instrumented air-to-ground ranges that provide realistic threats to integrated strike packages. The ranges available for most of our combat air forces to train against are largely inadequate in both size and threat array, requiring workarounds that seriously degrade training. This is an area where the Department of Defense must spend some money for threat emitter equipment; they must also hold the line against civilian encroachment of ranges.

### **SUMMARY**

As America and her allies cruise along in this post-Cold War or pre-whatever era, there are very few certainties. One thing *is* certain; if America continues to turn to air power, J-SEAD lies squarely on the critical path to battlespace dominance. Indeed, without decisive J-SEAD capabilities, the US may find itself unable to exercise its powerful influence across unfriendly borders. Most defense analysts and pundits agree that threats to global security

and pursuit of national interests are on the increase. They also agree that money to counter those threats is not readily available and must compete with other defense and domestic priorities. This has implications for the entire defense department, of course, but it is perfectly illustrated in the J-SEAD arena.

There is a definite need to focus US SEAD capabilities on joint interoperability. Refining joint doctrine and placing high-level emphasis on joint exercises and joint procurement are steps in the right direction—simple, low-cost improvements to the nation's warfighting capability. By taking these steps, America's armed forces will begin to move toward one another in their methods of J-SEAD application. And, to take advantage of these advances, US Joint Force Commanders must place the proper emphasis on the use of lethal J-SEAD in a phased, operational campaign to ensure decisive results in the future.

"The US edge in SEAD combat can no longer rest upon superior technology as the key element in achieving overwhelming advantage. The US edge—if it is to be maintained—will be held by integrating existing SEAD resources and combining the joint skills of all the services' SEAD expertise."<sup>18</sup>

### **CONCLUSIONS AND RECOMMENDATIONS**

The changes that have taken place in world conflict since the end of the Cold War have not reduced the importance of suppression of enemy air defenses. If anything, SEAD's stock has risen. Air power has increasingly become the instrument of choice, and assuring the survivability of our airborne platforms, both manned and unmanned, is essential to air operations.<sup>19</sup> For this reason, military and civilian leaders must focus on improving SEAD capabilities. There are three essential steps to doing so.

First, the Joint Staff and national defense “think tanks” must conduct high-level studies to determine shortfalls in hardware as well as intangible factors such as doctrine and training. Some studies of this type are already underway at the Joint Staff and must continue. If these studies determine that new weapon systems or technologies are essential to America’s continued dominance in air operations, then Congress must fund them.

Second, all of the military services must improve their record concerning the joint application of SEAD. They must plan, formulate joint doctrine, and conduct continuing joint exercises and experimentation to optimize J-SEAD employment. It will require determined effort and emphasis at all levels, from the service chiefs on down the line. The cost of improving joint interoperability is minimal, but the potential payoff in J-SEAD capabilities is enormous.

Third, US combat commanders must thoroughly understand the criticality of J-SEAD to military operations in today’s environment. They must become familiar with J-SEAD capabilities and they must plan and execute a sound J-SEAD campaign in future unilateral or coalition military operations. Air power and SEAD have significantly evolved in recent years, and will continue to do so. Commanders must be educated on the proper use of J-SEAD to ensure aerospace dominance. They should begin with Air Land Sea Application Center’s J-SEAD publication, which offers much to joint warfighters at both the theater-strategic and operational levels of war.

America possesses tremendous combat capability, but the enemy is not idle. If America is to maintain its edge in this uncertain world, she must seize every opportunity for improvement. This includes the prudent procurement of new technology and the determined efforts of her servicemen and women to develop together into a joint war-fighting machine.

## NOTES

<sup>1</sup> James R. Brungess, Setting the Context, Suppression of Enemy Air Defenses and Joint War Fighting in an Uncertain World, (Maxwell Air Force Base, AL: Air University Press, 1994), 40.

<sup>2</sup> Joint Chiefs of Staff, JTTP for Joint Suppression of Enemy Defenses (J-SEAD), Joint Pub 3-01.4 (Washington, DC: 25 July 1995), I-1.

<sup>3</sup> Brungess, 41.

<sup>4</sup> Ibid., 42.

<sup>5</sup> Report to Congress: Kosovo/Operation Allied Force After-Action Report, (Washington, DC: Department of Defense, 2000), 7.

<sup>6</sup> Charles W. Lyon, Chief, Studies, Analysis & Gaming Division, Joint Staff/J-8, interview with the author, 14 March and 13 May 2001. These charts were supplied by Colonel Lyon, former 22<sup>nd</sup> Expeditionary Fighter Squadron Commander, from data compiled at the end of Operation Allied Force.

<sup>7</sup> Lyon, interview, 13 May 2001. The factors outlined in this section are an amalgamation of ideas generated through many discussions with the author both during and after Operation Allied Force.

<sup>8</sup> Ibid.

<sup>9</sup> Brungess, 105.

<sup>10</sup> "Joint Suppression of Enemy Air Defenses (J-SEAD) Joint Mission Area Analysis," 5 May 2001, <<http://jcs62.js.smil.mil/j8fdpad/index.htm>> [5 May 2001], 1.

<sup>11</sup> Ibid., 4.

<sup>12</sup> Report to Congress: Kosovo, 133.

<sup>13</sup> Air Land Sea Application Center, Multiservice Tactics, Techniques, and Procedures for Joint Suppression of Enemy Air Defenses, AFTTP(I) 3-2.28, (Langley Air Force Base, VA: September 2000), III-1.

<sup>14</sup> Ibid.

<sup>15</sup> Ibid., III-4.

<sup>16</sup> Brungess, 160.

<sup>17</sup> Ibid.

<sup>18</sup> Ibid., 159.

<sup>19</sup> Ibid., xi.

### ANNEX 1

**Note:** The acronym “PET” means a planned, pre-emptive AGM-88 HARM shot against a known, geolocated SAM site, whether it is emitting or not. A reactive shot is targeted against an active, emitting EW or SAM site that is threatening or engaging friendly aircraft.

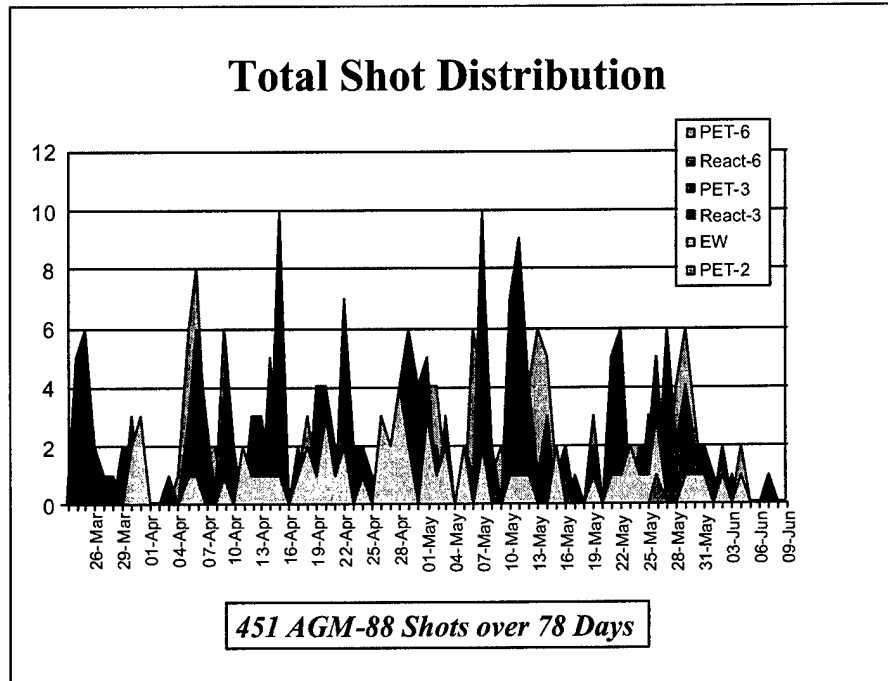


Chart 1

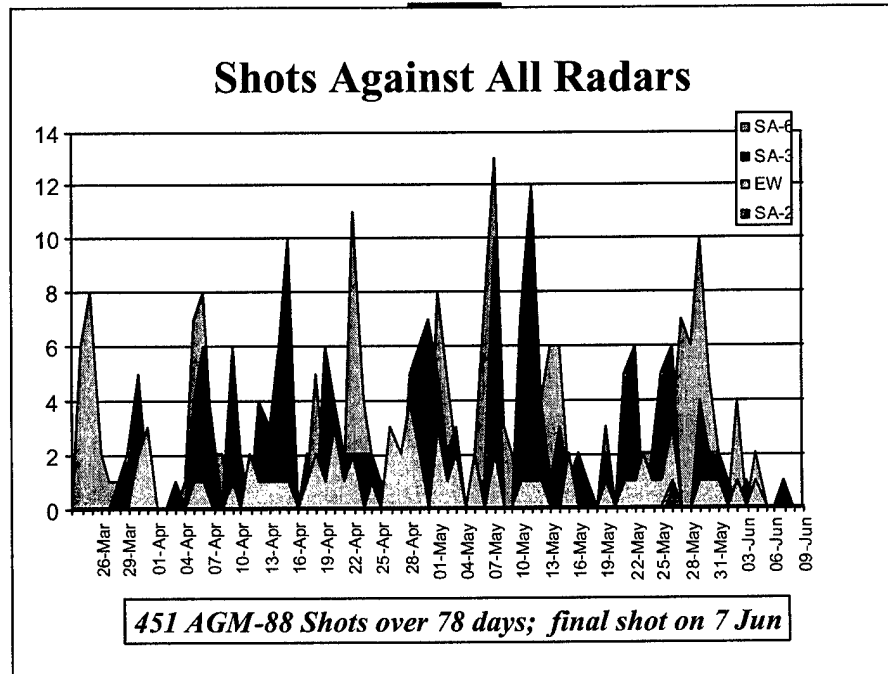
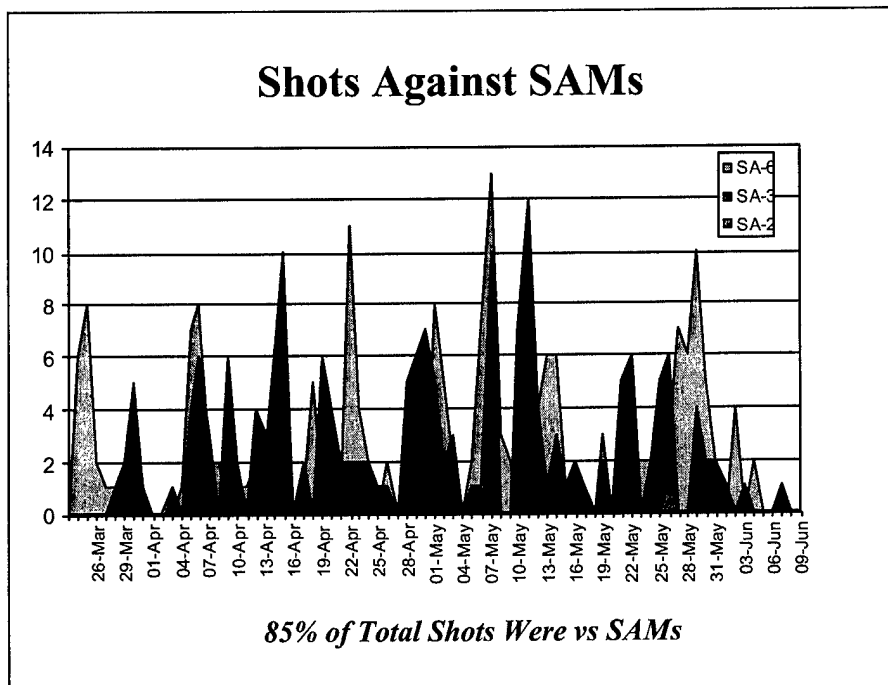
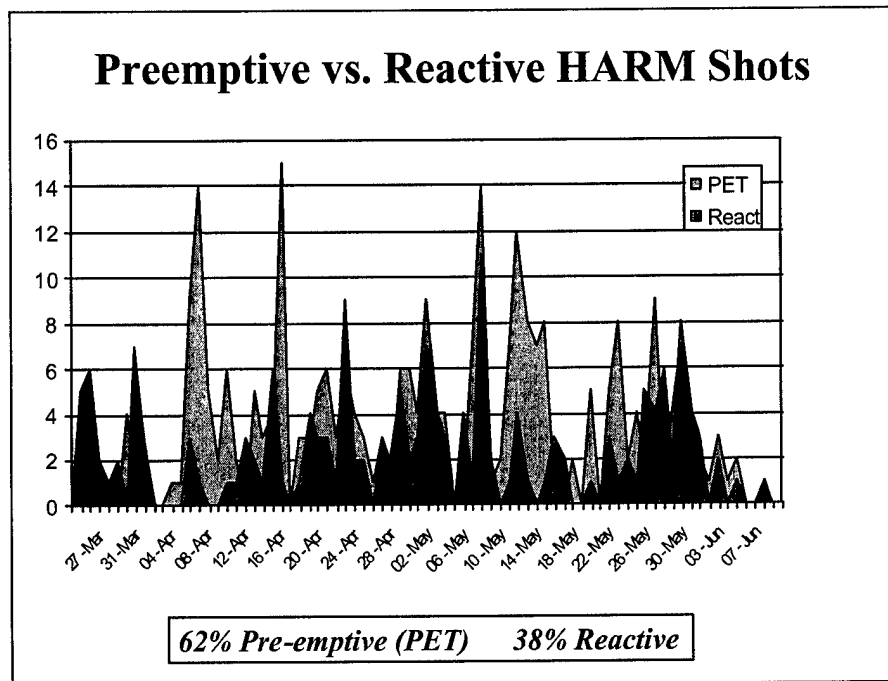


Chart 2

**ANNEX 1 (Cont.)**



**Chart 3**



**Chart 4**

# ANNEX 1 (Cont)

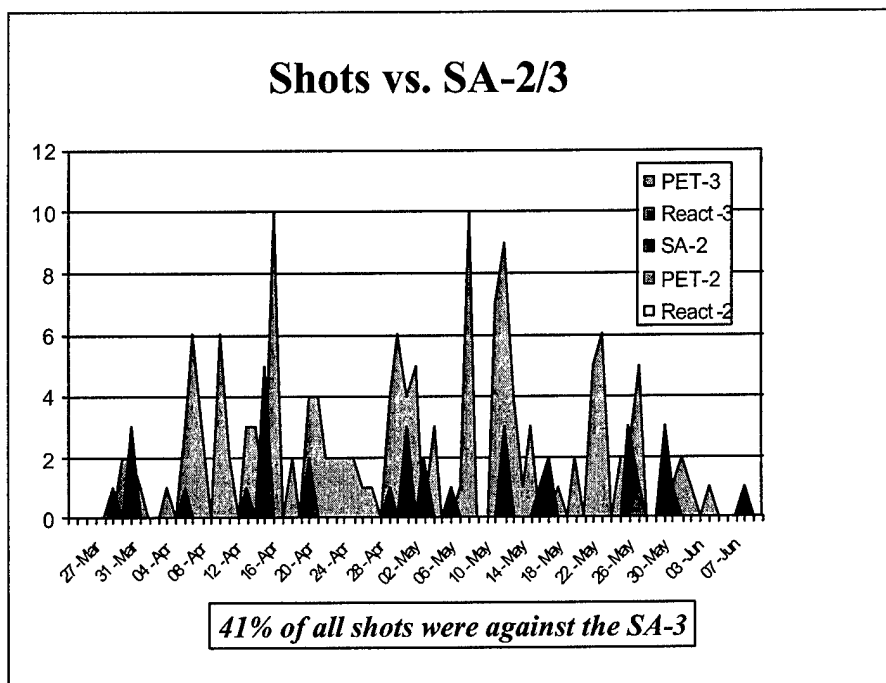


Chart 5

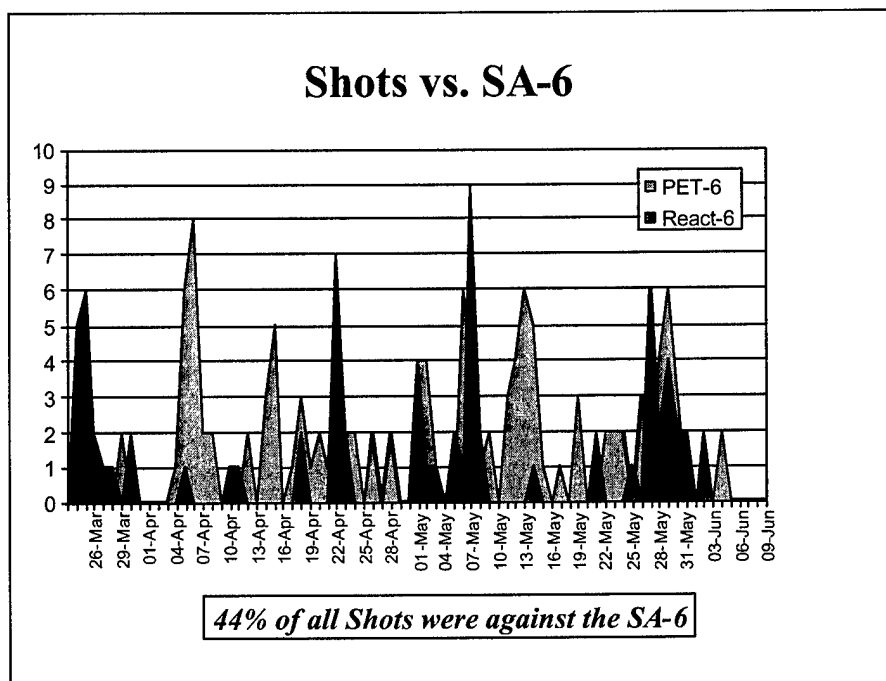


Chart 6

## ANNEX 1 (Cont.)

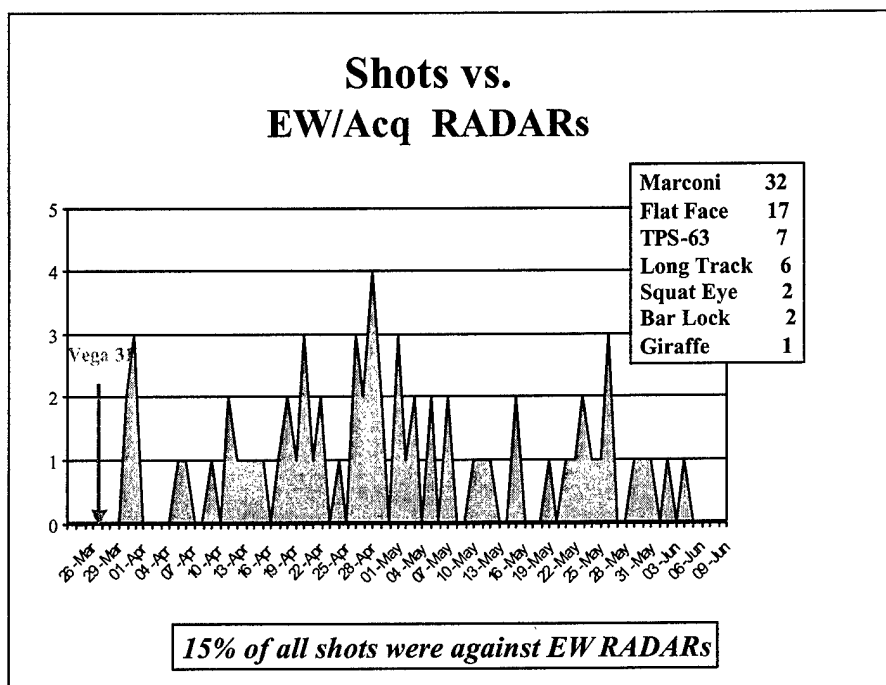


Chart 7

### Notes

- Three 18-PAA F-16CJ squadrons participated in Allied Force
  - 23 EFS Spangdahlem AB, Germany (USAFE)
    - 23 EFS (USAFE) deployed to Aviano AB, Italy (24 Feb-4 Jun)
  - 22 EFS Spangdahlem AB, Germany (USAFE)
    - 22 EFS (USAFE) flew from Spangdahlem AB, GE, (6 Apr-4 Jun) then deployed to Aviano AB, Italy (5 Jun-22 Jun)
  - 78 EFS Shaw AFB, South Carolina (ACC)
    - 78 EFS (ACC) deployed to Aviano AB, Italy (15 Apr-30 Jun)
- Information was provided by each fighter squadron and is at the unclassified level
  - 451 AGM-88 shots taken by USAF F-16CJs
    - 85% were preemptive shots
    - 15% were reactive shots

Chart 8

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